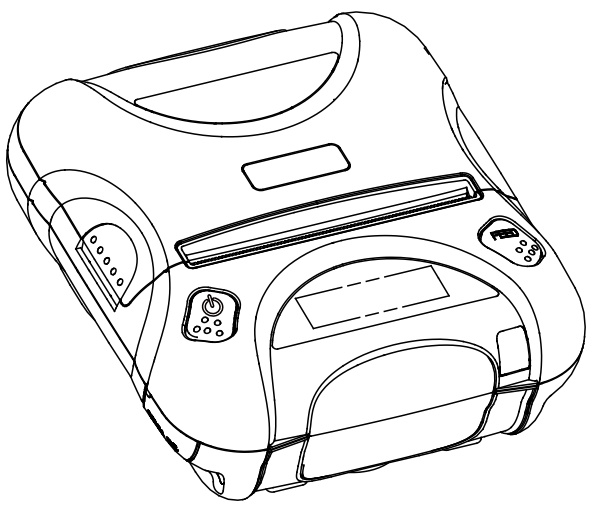
Mobile Printer

SM-T300 SERIES

Models: **SM-T300**
SM-T301
SM-T302

Hardware Manual



Federal Communications Commission
Radio Frequency Interference Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does
cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications not expressly approved by the manufacturer could void the user's authority to operated the equipment under FCC rules.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.
This equipment complies with FCC radiation exposure limits set forth for uncontrolled equipment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65. This equipment has very low levels of RF energy that it is deemed to comply without testing of specific absorption ratio (SAR).

The above statement applies only to equipments marketed in U.S.A.

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- The above notwithstanding, STAR can assume no responsibility for any errors in this manual.

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⚠ Operating precautions

Please follow the precautions below to enjoy and maintain the full performance of the printer.

■ Using the Printer

- Some semiconductor devices are easily damaged by static electricity. You should turn the printer “OFF”, before you connect or removed the cable on the rear side, in order to guard the printer against the static electricity. If the printer is damaged by the static electricity, you should turn the printer “OFF”.
- Be careful not to drop or bump the printer on a hard surface.
- Do not install the printer in direct sunlight or such areas.

Suitable environment for the use of the printer is as follows:

Operating temperature :-10 °C to 50 °C

Relative humidity : 30 % to 80 % (No condensation)

- Do not install the printer near devices that generate strong electromagnetic fields such as a copy machine.
- Do not open the paper cover during printing .
- Do not remove or reinstall the communication cable during printing or transmission.
- Do not touch the connectors of the communication during printing.
- Switch the POWER OFF when not in use.
- Do not use alcohol or other solvent.
- The battery charger and the battery pack may become warm when in use. This is normal and is not a malfunction.
- When the battery pack is used at low temperature, the length of time the printer can be used may be shortened.

■ Thermal Paper Handling

- Store the thermal paper in a cool, dry and dark place.
- Do not rub the paper with hard object.
- Do not leave the paper with hard object.
- Do not allow plastic film, erasers, or adhesive tape to touch the paper for long periods.
- Do not stack the thermal paper with diazo copies immediately after copying or wet-type copies.
- Do not use chemical glue.
- Always use the clean thermal paper.

Choosing a place for the printer

Before actually unpacking the printer, you should take a few minutes to think about where you plan to use it. Remember the following points when doing this.

- ✓ Choose a firm, level surface where the printer will not be exposed to vibration.
- ✓ The power outlet you plan to connect to for power should be nearby and unobstructed.
- ✓ Make sure that the printer is close enough to your host computer for you to connect the two.
- ✓ Make sure that the printer is not exposed to direct sunlight.
- ✓ Make sure that the printer is well away from heaters and other sources of extreme heat.
- ✓ Make sure that the surrounding area is clean, dry, and free of dust.
- ✓ Make sure that the printer is connected to a reliable power outlet. It should not be on the same electric circuit as copiers, refrigerators, or other appliances that cause power spikes.
- ✓ Make sure that the room where you are using the printer is not too humid.

⚠WARNING

- ✓ Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise. Immediately unplug the equipment and contact your dealer for advice.
- ✓ Never attempt to repair this product yourself. Improper repair work can be dangerous.
- ✓ Never disassemble or modify this product. Tampering with this product may result in injury, fire, or electric shock.

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1. Introduction

This printer is the ideal solution for Mobile banking system , Retail,

point of sales, Credit card Transaction, other traveling and mobile computing etc.

The general features of this printer are as follows:

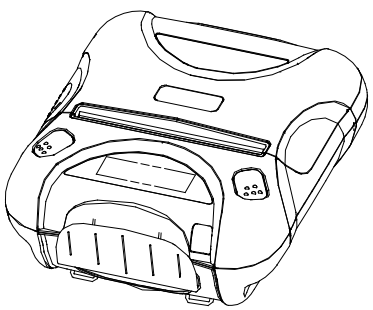
- Pocket size (120 × 132.2 × 58.3 mm)
- Light weight (560 g) for true mobility
- Very silent printing thru direct thermal printing method
- High speed (75 mm/sec, MAX)
- RS-232C, Bluetooth Ver2.1 interface
- Support Magnetic Stripe Reader
- Support Graphic LCD(128 × 32 dots) with Blue LED Backlight
- Support text and graphic printing
- Support bit-image(logo), firmware download
- Easier paper roll loading by CLAMSHELL design
- One touch paper cover
- Printer door open sensor & Paper-out sensor
- Flow control : Software (XON/XOFF)

  ※ Hardware flow control not supported in printer.

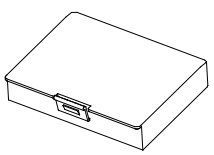
2. Setting up the printer

2.1. Printer & accessories

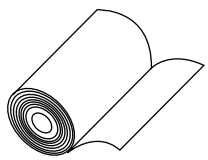
Your printer box should include these items. If any items are damaged or missing, please contact your dealer for assistance.



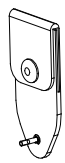
Printer



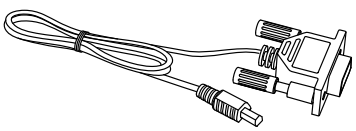
Battery pack



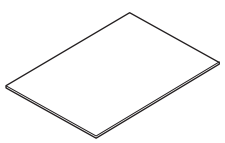
Paper



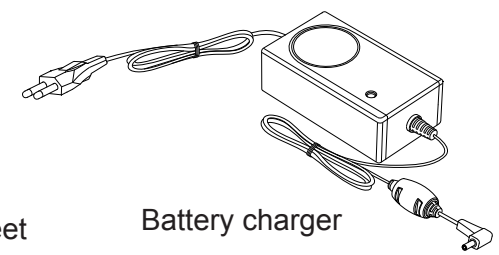
Belt clip



Communication cable

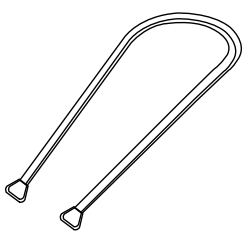


Safety instruction sheet

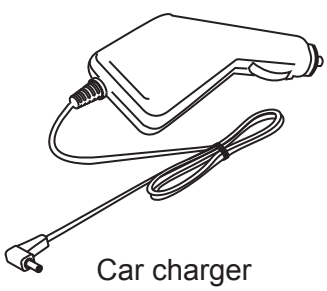


Battery charger

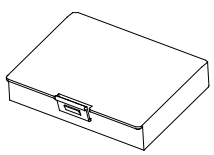
▼ OPTIONAL



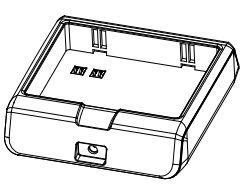
Shoulder strap



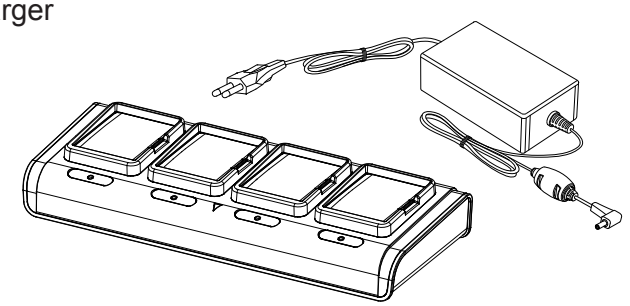
Car charger



Extra battery pack



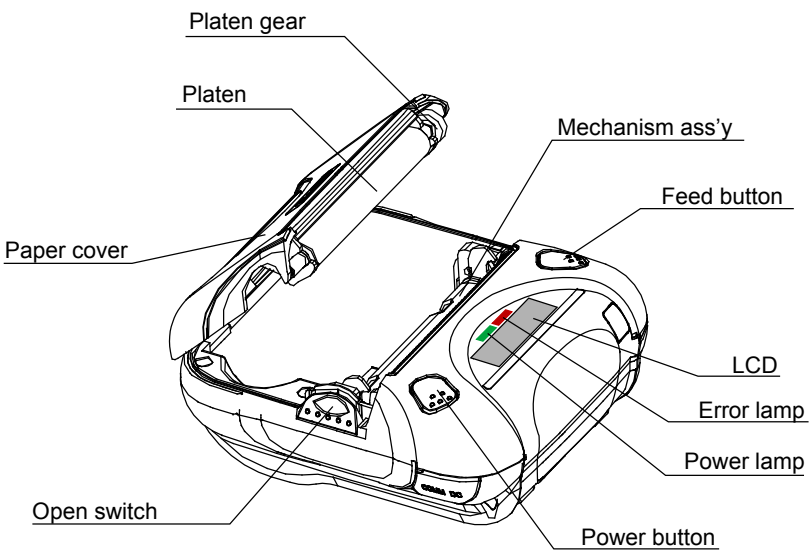
Battery holder

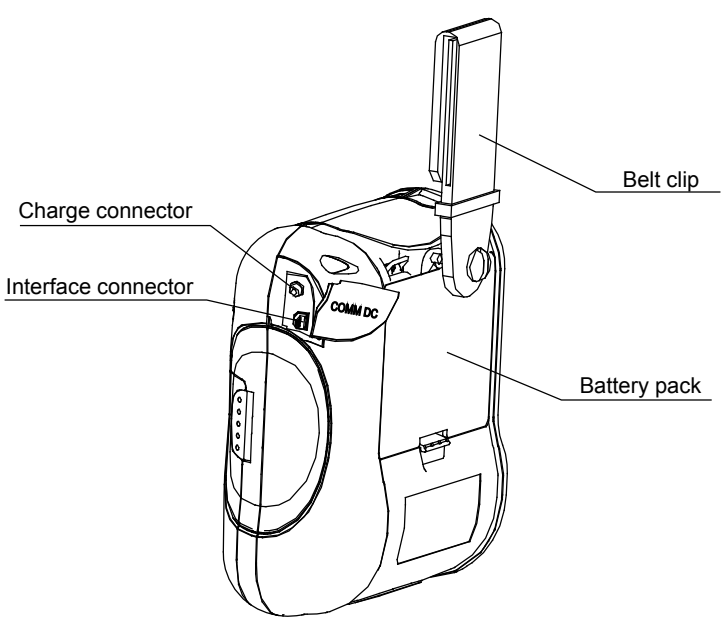


4 unit battery charger (Special battery charger + 4 unit holder)

2.2. Printer features

■ Part Name

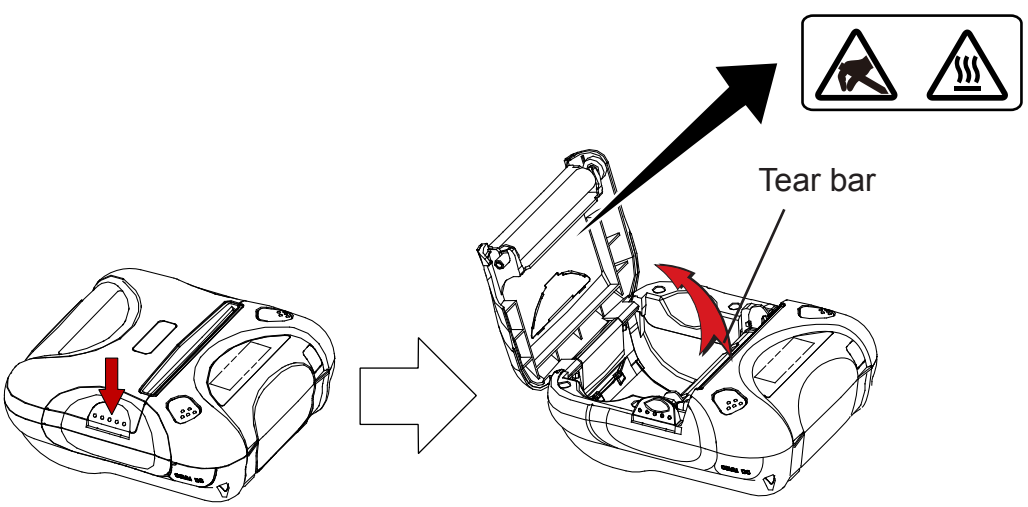




2.3. Replacing paper roll

> ⚠ **Cautions :**
>
> Be sure to use paper rolls that meet the specifications. Do not use paper rolls that have the paper glued to the core because the printer cannot detect the paper end correctly.

1. Make sure that the printer is not receiving data; otherwise, data may be lost.
2. Open the paper cover by pushing down the open switch and pull it up.



Caution Symbol

This symbol is placed near the thermal head to indicate that it may be hot. Never touch the thermal head immediately after the printer has been used. Let the thermal head cool for a few minutes before touching it.

⚠WARNING

1) Do not touch the tear bar.

- *There is a tear bar inside the paper outlet slot. Not only should you not put your hand in the paper outlet slot while printing is in progress, never put your hand into the outlet even when printing is not in progress.*
- *The paper cover can be opened when replacing the paper. However, since the tear bar is on the inside of the paper cover, be careful not to place your face or hands too close to the tear bar.*

2) During and immediately after printing, the area around the thermal head is very hot. Do not touch it, as you could be burned.

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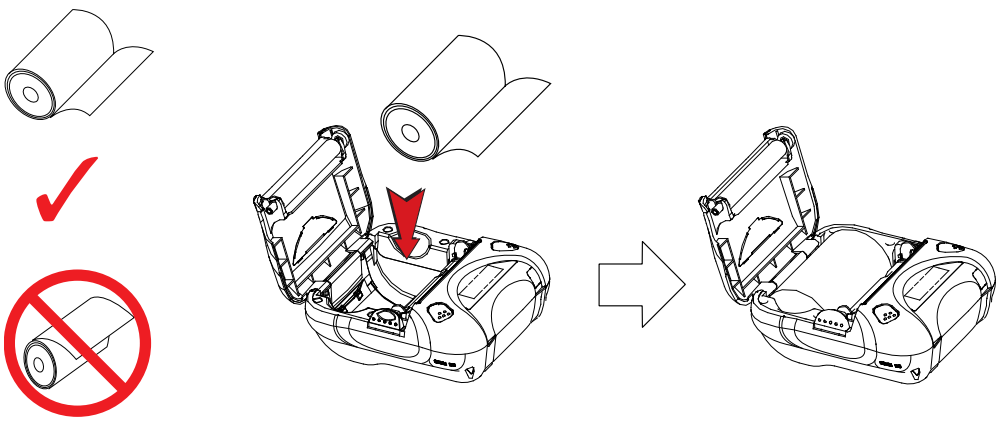
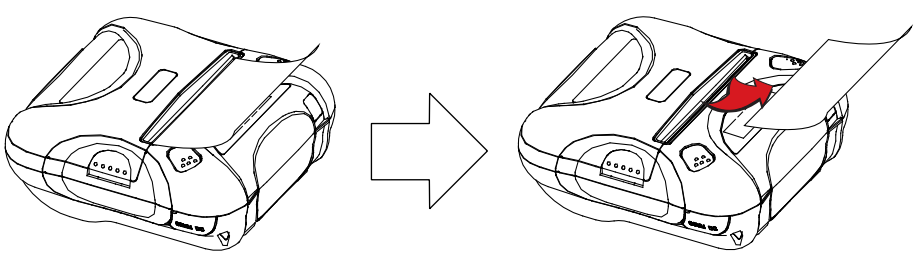
3. Insert a new paper roll as shown.



4. Tear the excess paper off using the tear bar.



2.4. Power supply

2.4.1. Specified power supply

The following specification is requested for Power supply.

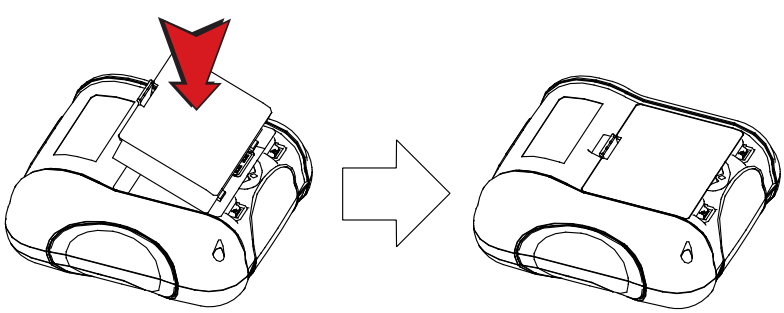
Battery Charger : DC 8.4 V/0.8 A

Avoid using power supply which its power capacity of power current is extremely high.

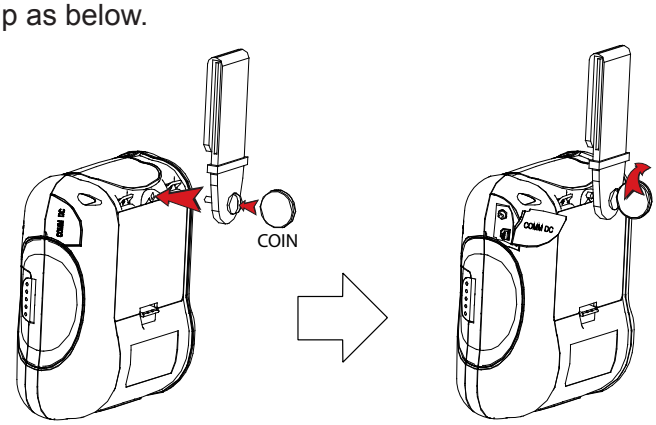
2.4.2. Installing the battery and the belt clip

> ⚠ **Cautions :**
>
> 1) Before installing or removing the battery pack, ensure the printer is OFF.
>
> 2) If the printer is not used for long period of time, remove the battery pack from the printer.

1. To install battery pack, proceed as follows:
   - Insert the battery pack in the direction of the arrow.
2. Reverse the order to remove the battery pack.

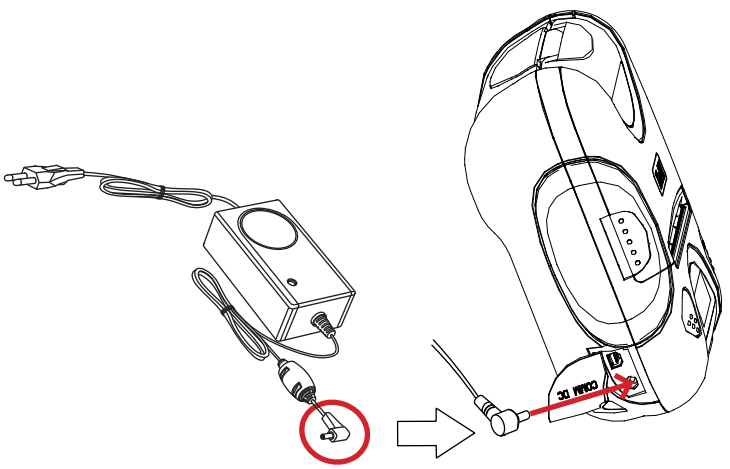


3. Attach the belt clip as below.



2.4.3. Recharging the battery pack

For recharging the battery pack, install the battery pack in the printer.
Insert the Battery Charger to the charge connector of the printer.



⚠ Cautions :

1) While charging the printer, turn off the printer power.
2) Do not remove the battery during charging.
3) If the printer is not used for a long time, unplug the power cord from the printer and outlet.
4) You must use the supplied or optional battery charger.
5) Red Lamp: charging the battery.
   Green Lamp: charging is finished.

Notes :

1) The battery is consumable parts and the use hour is gradually decreases. (Warranty 6 month)
2) The recharging time depends on the voltage level and ambient temperature of the battery. Normally, if takes about 4 to 5 hours to recharge a battery pack.

2.5. Memory switch settings

1. Change the Memory switch by this operation. (Refer to Table 1).
   POWER button : changing Printer MODE status
   FEED button : changing OPTION status.

2. [Example] The defaults of the printer are :
   Bluetooth/57600 bps/8 Data bit/No Parity/1 stop bit/Density Medium
   If a user wants to change the defaults with
   RS-232C/9600 bps/7 Data bit/Even Parity/2 stop bit/Density High

   ▶ After pressing the POWER and the FEED button simultaneously, if the ERROR lamp 5 turn signals POWER button is converted with MODE functions

   → You will see present COMMUNICATION mode in the LCD.
   → Press the POWER Button one time.
   (The interface mode has set to RS-232C mode.)
   Bluetooth → RS-232C

   ▶ Press FEED button one time.
   → You will see present BAUD RATE mode in the LCD.
   Communication Port → Baud Rate
   → Press the POWER Button twice.
   (The baud rate has set to 9600 bps)
   57600 bps → 115200 bps → 9600 bps

   ▶ Press FEED button one time.
   → You will see present DATA BIT mode in the LCD.
   Baud Rate → Data Bit
   → Press the POWER Button one time.
   (The data bit has set to 7 data bit.)
   8 Data Bit → 7 Data Bit

   ▶ Press FEED button one time.
   → You will see present PARITY BIT mode in the LCD.
   Data Bit → Parity Bit
   → Press the POWER Button twice.
   (The parity bit has set to even parity bit.)
   No Parity →Even Parity

▶ Press FEED button one time.
→ You will see present STOP BIT mode in the LCD.
Parity Bit → Stop Bit
→ Press the POWER Button one time.
(The stop bit has set to 2 stop bit.)
1 Stop Bit → 2 Stop Bit

▶ Press FEED button one time.
→ You will see present DENSITY mode in the LCD.
Stop Bit → Density
→ Press the POWER Button one time.
(The density has set to high.)
Density Medium → Density High

If all the mode have set, press the FEED Button and the POWER Button at the same time after then release the buttons at the same time.

The printer will print out the mode status which has modified.
(RS-232C/9600 bps/7 Data bit/Even Parity/2 stop bit/Density High)

If the status is not correct, please try it again according to the procedure.

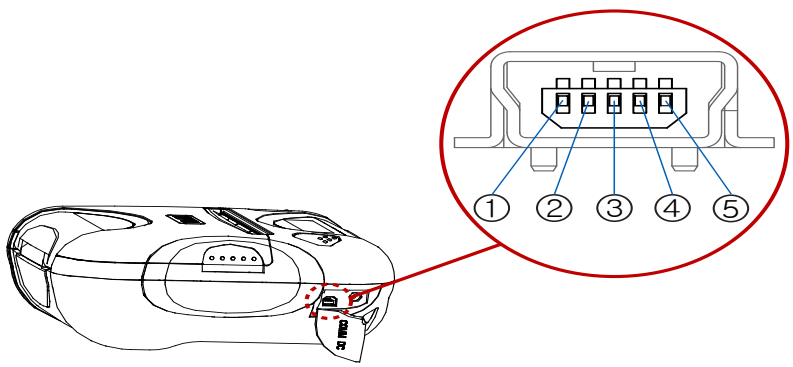
Table 1

Printer Mode	POWER Lamp (Green)	ERROR Lamp (Red)	Option
Communication Port	1	1	RS-232C
		2	Bluetooth *
Baud Rate	2	1	9600 bp
		2	19200 bps
		3	38400 bps
		4	57600 bps *
		5	115200 bps
Data Bit	3	1	7 Data bit
		2	8 Data bit *
Parity Bit	4	1	No Parity *
		2	Odd Parity
		3	Even Parity
Stop Bit	5	1	1 Stop bit *
		2	2 Stop bit
Density	6	1	Density Low
		2	Density Medium *
		3	Density High
Quality	7	1	Low *
		2	High
Sensor	8	1	Low *
		2	Medium 1
		3	Medium 2
		4	High
Power Down	9	1	No use *
		2	1 minute
		3	2 minute
		4	3 minute
		5	4 minute
		6	5 minute

* : Default

3. Interface

3.1. RS-232C



This printer has a RS-232C interface and is connected by means of a 5 pin mini USB socket. In the following table, the signals present on the Mini-USB socket are listed:

Pin No.	Name	Direction	Function
1	TxD	Output	Transmit Data
2	RxD	Input	Receive Data
3	CTS	-	-
4	NC.	-	-
5	GND	-	Ground

⚠ Caution :

When it removes the communication cable during receiving data, it loses a data.

Don’t connect USB mini B cable here.

3.2. Bluetooth

Category	Specification
Bluetooth Spec.	Bluetooth V2.1 / Class 2 (10 m)
Frequency Range	2.4 GHz ISM BAND
Data Transmission Rate	57600 bps Fixed.
Data bit	8 Data bit Fixed.
Parity bit	No parity Fixed.
Stop bit	1 Stop bit Fixed.

PIN code: 1234 as default

Device Name: Star SM-T300 (without MSR model)

Device Name: Star SM-T301 (1st and 2nd Track MSR model)

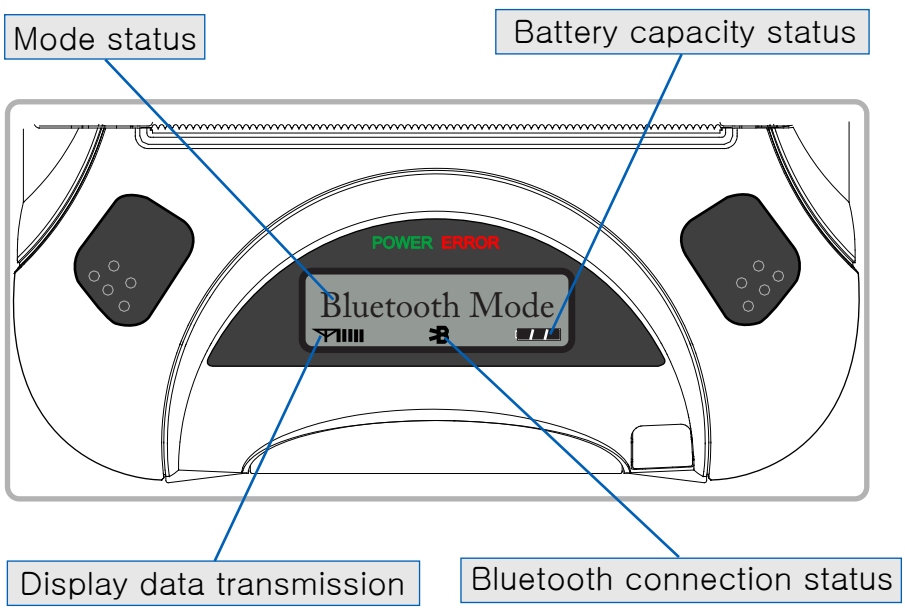
Device Name: Star SM-T302 (2nd and 3rd Track MSR model)

⚠ Caution

1) If the quantity of data which is printed at once is more than 1M byte on Bluetooth communication, it would cause the buffer to overflow and the data to get damaged.
2) Concerning security purpose, we recommend to change PIN code by the original tool. Please contact with our dealer to get it.

4. Using the printer

4.1. Control panel



▶ Button

FEED Button :

When the printer is on, paper can be feed manually by pressing and holding the FEED button for more than one second.

POWER Button :

① When of 5 or more seconds presses and power comes to on or off.
② After pressing the POWER and the FEED button simultaneously, if the ERROR lamp 5 turn signals POWER button is converted with MODE functions. MODE functions are for use to change communication mode.
(Refer to **2.5. Memory switch settings** for details about mode conversion)

▶ Panel lamp

POWER (Green) : Printer is ON and ready to receive data.

ERROR (Red) : Indicated a fault condition or a printer error.
(i.e : no paper, paper cover opened. etc.)

4.2. The self test

The self test procedure will check most of the printer functions.
For self test, turn on the power while holding down the FEED Button.
The Self-Test checks the following :

1) Make sure paper roll has been installed properly.
2) The Self-Test prints the current printer status, which provides the control ROM version and the communication method setting.
3) After printing the current printer status, Self-Test will print a pattern using the built-in character set.
4) The Self-Test automatically ends.

The printer is ready to receive data as soon as it completed the self test.

4.3. Instruction for auto power down mode

The printer in the Power Down Mode will recover to the Print Ready Mode when receiving commands or button operations.
However, print data received while shifting from the Power Down Mode to the print Ready Mode (for approx. 1 sec.) is discarded and cannot be printed.
Therefore, if the printer is in the Power Down Mode, please be sure to recover it to the Print Ready Mode before sending print data.

[How to Recover to Print Ready Mode & How to Check]

1) Send the Status command (DLE EOT EOT), and Try to re-send it until receiving the transmission value which is from 30H to 37H.

   Or

2) Press the FEED Button or the MODE Button (the Power Button for SM-T300 series) and confirm that the Power lamp (Green LED) is turned on.

5. Consumable parts

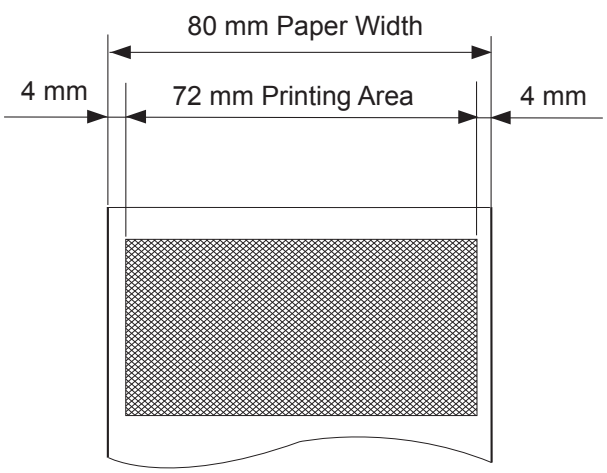
5.1. Recommended paper

Type :	Thermal Paper
Paper width :	79.5±0.5 mm
Paper thickness :	65±5 μm
Outer diameter :	Ø50 mm or less
Recording side :	Outside of roll

⚠ Cautions :

1) Do not paste the paper to the core. And the roll paper which has Near end mark printing on its near end is recommended.
2) Chemicals or oil may change the color of paper, or printed Characters may fade.
3) Change of paper color starts from approx 70 ℃.
   Pay attention to heat, humidity and sun light.
4) Color of paper may be changed by being scratched by nail or hard metal, etc.

5.2. Printing position

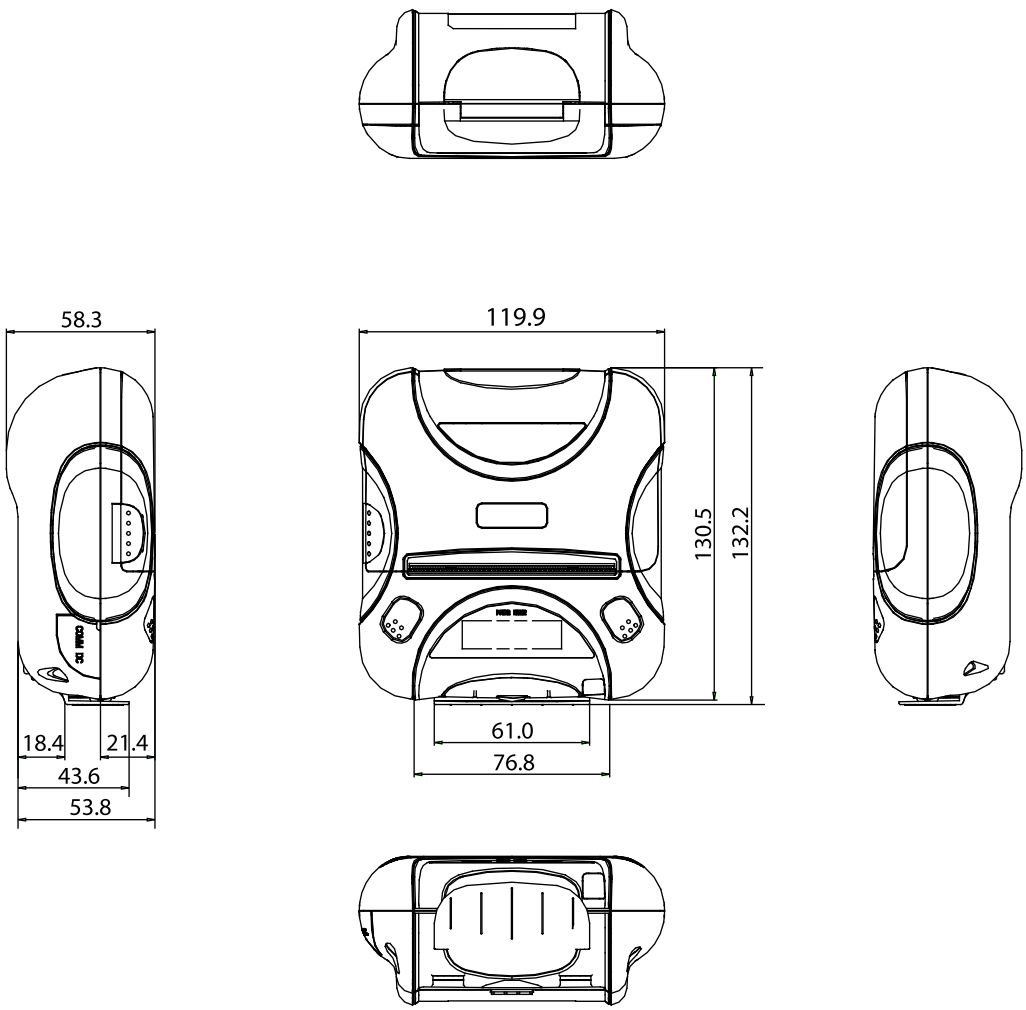


6. Specifications

Item	Specifications	
Print method	Direct thermal line printing	
Characters per line	64 cpl (MAX)	
Character size	Eng. : 9×24 dots, 12×24 dots, 8×16 dots Kor. : 16×24 dots (24×24 dots)	
Optional Characters	Simplified/Traditional Chinese, Arabic, Cyrillic, Russian, Tukish, Greek, Japanese, Persian, Latin9 and Others upon request.	
Resolution	203 dpi, 8 dots/mm	
Print width	3-inch (72 mm, 576 dots)	
Print speed	75 mm / sec (MAX)	
Dimension	120×132.2×58.3 mm	
Weight	560 g (Including battery & roll paper)	
Interface	RS-232C, Bluetooth Ver 2.1	
Paper roll	Thermal roll paper (80 mm wide, ø50)	
Barcodes	1-dimension : Code128, Code39, Interleaved 2/5, Code93, UPC, EAN, KAN, JAN, CODABAR 2-dimension : PDF417, QR Code, DATA Matrix	
H/W Spec.	MCU : 32bits RISC, FLASH : 4Mbytes, RAM : 8Mbytes	
Receive buffer size	1M bytes	
MSR	SM-T300 Not Supported MSR SM-T301 ISO 7810 / 7811 / 7812 1st and 2nd Track Reading SM-T302 ISO 7810 / 7811 / 7812 2nd and 3rd Track Reading	
LCD	128×32 Dots FSTN (Blue LED Backlight)	
Battery	Rechargeable 7.4V DC	
Battery duration	8 hour printing (12 receipts per hour)	
Battery charger	Input (100~250 V AC, 50~60 Hz) Output(8.4 VDC/0.8 A), 4 hours full charge time	
Environment conditions	Temperature *1)	-10 °C ~ 50 °C (operating) -20 °C ~ 60 °C (storage)
	Humidity	30 % - 80 % (operating) 10 % - 90 % (storage)
TPH Life	Approximately 50 Km	
Dust protected, Splash proof	IP54 Certified	

*1) Under 0°C, please change Density mode and Quality mode of the memory switch settings to both “High”.
If you want to print a delicate pattern like Barcode printing, please use the printer over 0°C.

■ Dimensions



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http://www.star-m.jp/eng/dl/dl02.htm
for the latest revision of the manual.

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